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Hedging Feeder Cattle With the Aid of Moving Averages

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Hedging Feeder Cattle with the Aid of Moving Averages

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American cattlemen have just come through a long and harrowing period. The sharp price break that began in late 1973 exposed producers to financially ruinous conditions. By early 1978, evidence began to accumulate that the price cycle had bottomed and several years of upward trending prices lay ahead.

Large price fluctuations coupled with narrow profit margins emphasize the importance and necessity of risk management if a producer is to maintain a financially sound and profitable operation. However, even though it is apparent that cattle prices will trend higher in the picture, future price risk will *not* be eliminated. In some respects, the risk will be even greater since the feeder cattle producer and the cattle feeder can expect to incur higher operating costs in the form of higher prices for stocker calves and feeder cattle, respectively.

In addition, cattle prices will continue to be volatile. Just as periods of rising cattle prices occurred following the price break in 1973, periods of falling prices will occur during the upward phase of the price cycle. The short hedge will still be useful, but more expertise will be required to obtain desired results. Selective short hedging strategies will be needed to protect against the short run price declines.

Upward trending prices present new opportunities for the long hedge. Several factors contribute to its potential use. The completion of the liquidation phase of the cow herd will result in reduced total supplies of beef. Decreased supplies of beef will result in higher cattle prices, and cattle feeders will have the incentive to bid up the price on the limited supplies of feeder cattle.

Although it is possible to reduce the price risk through hedging on the feeder cattle futures market, few farmers use the futures markets. According to a CFTC survey (Helmuth, 1977) more than 25% do not use the futures market because they are not acquainted with these markets.

During the past several years, producers have had available to them a wealth of information concerning the use of futures markets through the seminars and published materials of universities, the exchanges and commodity brokerage firms. Producers appear to need or want simple, easy to understand and apply, methods of timing the placement and lifting of hedges.

Moving averages are an objective device free from the user's emotions or subjective judgments. Moving averages are simple to use, requiring no knowledge of statistics nor econometric modeling, and an inexpensive calculator can handle all the necessary computations. No extensive data is needed since only the closing prices of the appropriate feeder cattle futures contract are used in the calculation of the moving average.

Because of these desirable characteristics, selective hedging strategies based on moving averages should appeal to feeder cattle hedgers. However, the real satisfaction from any hedging device is its ability to obtain a more favorable price or to reduce risk. This study reports on an effort to isolate an optimum set of moving averages and to test the usefulness of such a set of averages in feeder cattle hedging programs.

The Moving Average Technique

Moving averages are a trend-following method of technical price analysis. Trading strategies using moving averages are based on the principle of buying strength and selling weakness.

A moving average of prices is a progressive average in which the number of prices used, as indicated by the divisor remains the same. A new price is added to the end of the series at periodic intervals, e.g. daily, as a price is simultaneously dropped from the beginning of the series.

Various weighting schemes can also be used in connection with a moving average. A linear weighting scheme consists of giving the oldest price in the series a weight of one, and then adding one to the weight for the next oldest price in the series. This process continues in similar manner with the most recent price having the largest weight which is equal to the number of prices in the moving average. The divisor for a linearly weighted moving average would be the sum of the weights instead of the number of prices in the series.[1]

Buy and sell signals are generated by the "crossing action" of the moving averages when more than one time length is used. Technically speaking, the crossing action generates the trading signals even if only one length of moving average is used. If this is the case, the other moving average is implicitly assumed to be a "one-day" moving average, i.e. the daily closing price.

On any day when the shorter length moving average crosses the longer length moving average from above, a downward trend in price is indicated which generates a sell signal. Similarly, when the shorter length moving average crosses the longer length moving average from below, an upward trend in price is indicated, resulting in a buy signal. Figure 1 illustrates the movement and crossing action of two moving averages.

Buy and sell signals are generated in the same manner when three moving averages are used. In Figure 2, a buy signal is indicated when the 4-day weighted leads the 5-day, and the 5-day is above the 10-day. The responsive 4-day weighted moving average confirms the crossing action of the other two moving averages, and thus eliminates some of the false signals. A sell signal is generated when the 4-day weighted is below the 5-day which must also be below the 10-day.

An important trade-off is involved in determining the length of time to use in computing the moving averages. The shorter the length of time, the more sensitive the moving average will be to any change in the price trend. New positions will be established quicker. However, the shorter the length of the moving average, the larger the number of trades that will be made. This results in a greater number of whipsaw losses and more commission expense. A longer length of time used to calculate the moving average will decrease the number of trades and whipsaw losses but will be slower to signal changes in price trends.

Procedure

The data set consisted of 18 feeder cattle contracts. The March, May and October contracts were used, beginning with the 1972 contract year and ending with the 1977

[1]To illustrate how a 4-day linear weighted moving is calculated, let t be the day of the most recent closing price. The 4-day weighted moving average is then calculated as follows:

Day	Closing Price	Weight	Product
t	49.00	4	196.00
t-1	48.50	3	145.50
t-2	48.00	2	96.00
t-3	48.00	1	48.50
		10	485.50

The 4-day weight average is 485.50 ÷ 10 = 48.55

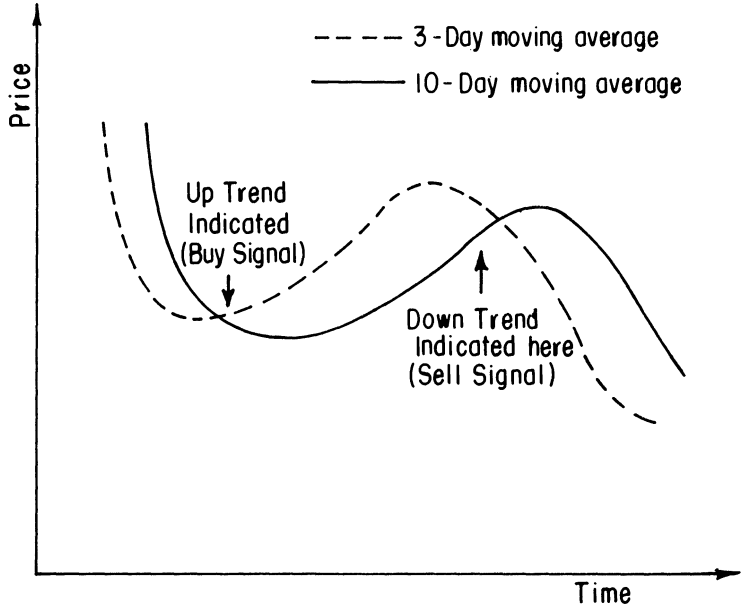

Figure 1. Illustration of crossing action of two moving averages.

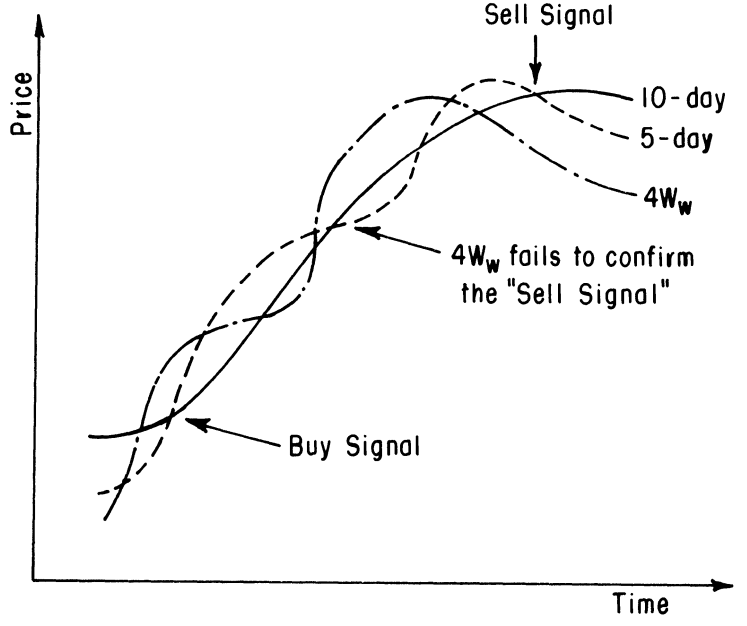

Figure 2. Illustration of buy and sell signals from three moving averages.

contract year. These delivery months were selected as the most representative of all the delivery months because of their relatively high trading volumes. The size of the open position was limited to one 42,000 pound contract for each delivery month at any point in time. The closing (settlement) price was used to calculate the moving average, and trades were executed on the same day the averages crossed.

In this study, optimum was defined as that combination of moving average parameters yielding the highest profits for the entire set of 18 contracts after charges for commissions.

To keep the trading simulation realistic, certain trading rules were imposed:

1. No trades were transacted on days when the high and low prices were equal, assuming no trading occurred for the contract on such days.
2. No trades were made on days when the closing price was up or down the daily limit.
3. Because of the threat of delivery, no *new* buy signals were honored after the first of the delivery month.

Analysis of Results

Although a large number of averages and combinations of averages including some coupled with various stops or penetration rules were tested only a small number are reported here. The averages selected for reporting include those that proved most profitable or are commonly used by the trade.

Table 1 indicates the net profitability of a wide range of moving average combinations. The results include profitability from both long positions and short positions as well as the volume of trading and the percent of profitable trades.

Table 1. Net profits in dollars from the feeder cattle futures market using combination of three moving averages, 1972-1977.

Lengths of Moving Averages[1]	Net Profits From Long Trades	Net Profits From Short Trades	Total Net Trades	Total Number of Trades	Percent Profitable Trades
4-9-18	17,615	6,012	23,627	132	45.5
4w-5-15	24,579	12,369	36,948	160	50.6
4w-5-10	23,038	18,278	41,316	202	43.1
4-5-10	23,443	16,639	40,082	216	43.1
3-5-10	22,635	16,180	38,815	208	44.2
3-10	24,536	17,864	42,400	268	40.3
4-10	24,555	19,827	44,382	256	43.4
5-10	24,635	19,646	44,281	256	51.4
4-8	28,402	23,927	52,329	300	42.0
2-4-8	24,817	21,088	45,905	241	44.0
3-4-8	28,175	23,380	51,555	253	43.1
3w-4-8	26,404	22,499	48,903	238	44.5
4w-4-8	26,496	22,767	49,263	235	45.1
2-4-8w	25,156	18,730	43,886	234	43.6
3-4-8w	32,019	25,334	57,353	260	44.6
3w-4-8w	28,263	22,460	50,723	233	45.1
4w-4-8w	28,217	22,589	50,806	230	45.7

[1]Length is in days. W denotes a linearly weighted moving average.

Table 2. Net profits in dollars from the feeder cattle futures market using selected moving averages with a penetration rule, 1972-1977.

Lengths of Moving Averages[1]	Minimum Penetration Required	Net Profits From Long Trades	Net Profits From Short Trades	Total Net Profits	Total Number of Trades	Percent Profitable Trades
3-10	.03	25,427	18,814	44,241	249	43.0
3-10	.04	25,650	18,700	44,350	248	42.7
3-10	.05	25,266	19,060	44,326	241	42.7
4w-5-10	.01	24,011	18,622	42,633	198	43.4
4w-5-10	.02	23,994	18,717	42,711	193	44.0
4w-5-10	.03	23,710	18,434	42,144	183	45.4
4-8	.04	29,614	24,286	53,900	268	42.2
4-8	.05	29,845	24,517	54,362	268	42.5
4-8	.06	28,440	23,217	51,657	256	41.8
4-8w	.04	32,087	24,761	56,848	288	42.2
4-8w	.05	33,828	26,405	60,233	276	42.5
4-8w	.06	32,820	25,291	58,111	254	41.8

[1]Length is in days. W denotes a linearly weighted moving average.

The most profitable combination of averages, without the use of stops or penetration rule, proved to be the 3-4-8w set which produced a total profit of $57,353. is significant that this set of averages and possesses a low ratio of profitable trades. Although the low ratio of profitable trades is undesirable, these results conform with the trade maxim that for maximum profits the trader must cut losses quickly.

The 3-10 averages are widely reported via the wire services and, though profitable, were not so profitable as the 3-4-8w averages. Also, the 3-10 resulted in a few more trades and an inferior ratio of profitable trades.

The 4-9-18 averages have received some publicity and performed rather poorly. The 4-9-18 also performed in an extremely poor fashion with regard to short positions, a factor of some significance to sell hedgers.

Some traders are using a 4w-5-10 set of averages for feeder cattle. Over the history that was examined the 4w-5-10 did not prove as profitable as the 3-10 averages. In fact, a 5-10 was superior to the 3-10 and the 4w-5-10 averages in terms of total profit and also provided a greater percentage of profitable trades than the other two alternatives.

Profits were improved by several thousand dollars through the use of a penetration rule. The penetration rule required that the averages cross by a prescribed minimum amount before a signal would be generated. Profits from a 3-10 set of averages were increased by nearly $2,000 with the use of a penetration rule. The profits from the 4w-5-10 averages were improved by nearly $1,400 through the use of a $0.02 penetration rule. The 4-8w averages continued to prove superior to any of the other alternatives tested. The use of a $0.05 penetration rule with the 4-8w averages increased total profits by nearly $8,000 to achieve a total profit of more than $60,000.

It is important to note that the profits generated from the moving average technique were not confined to a single unusual year. Although profits varied considerably from year to year, all years were profitable (Table 3).

Table 3. Yearly distribution of profits in dollars from moving selected combinations of moving averages, 1972-1977.

Combination[1]	1972	1973	1974	1975	1976	1977	Average
4-8w (.05)	3,150	10,865	14,497	8,037	13,249	10,435	10,039
3-10	3,242	9,041	7,689	4,583	14,644	3,201	7,067
4w-5-10	1,132	10,596	5,645	8,608	11,128	4,207	6,886

[1]W denotes a linearly weighted moving average. The number in parentheses is the minimum penetration required.

Hedging Strategies

No other marketing device has as much potential as the feeder cattle futures market in helping the producer obtain a more favorable price. An effective selective hedging strategy can substantially increase the profits of a feeder cattle operation. The problem is developing such a strategy which will protect against price declines without forfeiting the profits of an upward moving market. In the following sections, the results of the moving averages work will be applied to various production situations to determine the usefulness of selective hedging strategies based on this technical tool.

Three basic production situations representative of Northcentral and Northwestern Oklahoma were simulated to test the alternative short hedging strategies. The costs and revenues using actual cash prices were simulated over a six-year period beginning in November, 1971, and ending in October, 1977, for each of the three production alternatives. The stream of net returns from the production activities was combined

with the futures market profits from each of the hedging strategies to arrive at a mbined average return and standard deviation for each alternative.

The following costs were used for the production simulations:

1. A 400 to 500 pound choice stocker steer at Oklahoma City at the average weekly price for these calves.
2. Operating inputs including hay, protein supplement, starter feed, salt, veterinarian and medicine, trucking, sales commission and other miscellaneous expenses, plus labor costs and the ownership costs of machinery and equipment. The amounts and prices for these items were taken directly from enterprise budgets prepared by the Area Farm Management Extension Specialists in Northcentral and Northwestern Oklahoma.
3. Interest on the operating costs in (1) and (2) at the interest rates indicated in the enterprise budgests.
4. Commission and interest on the initial margin requirement for a feeder cattle futures contract. A commission charge of $50 per trade was subtracted from the returns. An $800 initial margin requirement was used. The same interest rate used in (3) was also used to calculate the interest charges on the margin requirement.

No charges were assessed for grazing in these simulations. All operating expenses were adjusted upward to reflect a 2% death loss.

The income from the sales of feeder steers at the end of the production period was computed from the average weekly price of choice feeder steers at Oklahoma City for the appropriate weight class during the week the steers were sold. The number of steers produced in each production situation was varied so that the total final weight of the feeder steers would be 42,000 pounds, the size of one feeder cattle futures contract.

roduction Alternatives

The first production alternative simulated the situation where stocker calves are bought in the fall and grazed on small grains pasture only until the middle of March. This simulation corresponds with a farmer planning to harvest the grain. Seventy-four 400 pound stocker steers are purchased during the week of November 15 and sold at a weight of 565 pounds during the week of March 15 for an average daily gain of 1.25 pounds. The March feeder cattle contract is used for hedging. This procedure is repeated for each of the six years.

With the second production alternative, the feeder steers are allowed to graze-out the small grains pasture. Sixty-two stockers weighing 400 pounds are bought during the week of November 15 and sold at a weight of 678 pounds during the week of May 15. Average daily gains are assumed to be 1.35 pounds from November 15 to March 15 and 1.85 pounds from March 15 to May 15. The May contract is used for hedging the feeder steers.

The final production alternative is a summer stocker simulation. Sixty-one 500 pound stocker steer calves are purchased on May 1 and are sold at a weight of 690 pounds on October 1. An average daily gain of 1.25 pounds is assumed during this five-month period. The October contract is used for hedging.

Short Hedge Strategies

The same trading rules and buy/sell signals used in the optimization procedure were used to place and lift the short hedges. Strategy 1 is a no-hedge strategy. It corresponds to the production activity only and serves as a benchmark to compare the effectiveness of the other strategies.

Strategy 2 is a non-selective hedging strategy. A hedge is placed at the beginning of the production process and lifted when the feeder steers are sold. This strategy will

increase profits compared to the no-hedge strategy only if the futures price at the beginning of the production period is greater than at the end of the period. However, this strategy should reduce the variability of the flow of net returns considerably. Apart from the basic risk, loss in the cash market would be offset by the lower futures prices.

Strategy 3 is a selective hedging strategy based on the 3- and 10-day moving averages. The hedge is placed whenever the 3-day average crosses the 10-day average from above. The hedge is lifted whenever the 3-day average crosses the 10-day average from below. Therefore, the hedge could be placed and lifted several times during the production period.

Theoretically, a selective hedging strategy should protect the feeder cattle producer from a price decline and also allows the benefits of upward moving cash prices. The 3- and 10-day combination was selected for testing since it is reported by a commodity news wire.

Strategy 4 is similar to Strategy 3 except that the 4-day linearly weighted, 5-day and 10-day moving average combination is used instead of the 3-10 combination. The 4w-5-10 combination was selected for testing since it was a profitable hedge for feeder cattle in some earlier research.

Strategy 5 uses the 4-day and 8-day linearly weighted moving averages with a $0.05 per cwt. minimum penetration rule to place and lift hedges. This moving average combination was included because it produced the highest net profits from the short trades in the optimization procedure.

Tables 4, 5 and 6 present the summary statistics for the five short hedging strategies for each of the production alternatives. Each of the technical hedging strategies was superior to the no-hedge and the hedge-and-hold strategies in terms of the average return for all three of the production situations. Risk, as measured by the standard deviation of returns, was less than for the no-hedge strategy but greater than for a hedge-and-hold strategy.

For the small grains grazing production alternative, all three technical strategies provided about the same average return but the 4-8w with a $0.05 penetration rule provided less risk. The 4-8w strategy yielded an average return of more than 4.5 times the average return of the hedge and hold strategy at only slightly greater risk. For this production alternative, the 4-8w strategy also provided a low return which was positive.

For the small grains grazeout production alternative, the 4-8w strategy provided the highest average return. This technical strategy yielded an average return about double that of the hedge-and-hold strategy but at a risk of 3.5 times the hedge-and-hold strategy. Although most of the strategies produced a positive low return, the 4-8w provided the highest low level return and next to the highest high level return.

In the case of the summer stocker alternative, the 4-8w strategy had the highest average return and the lowest risk factor among the technical strategies.

When compared with the hedge and hold strategy, the 4-8w strategy involves a trade-off between a 1.75-fold increase in returns for a 1.70-fold increase in the risk factor. For hedgers where avoiding a negative return is important, the hedge-and-hold strategy is superior resulting in a low return of −$2.85. Where negative returns are not so crucial, the 4-8w strategy would seem to provide a reasonable alternative.

Long Hedge Strategies

Cattle prices have been in an irregular upward trend since the fall of 1977. Although feeder cattle prices have nearly doubled since that period, the continued liquidation of herds portends even higher prices in the future. Some seers are projecting inventories around 108 million head on January 1, 1980. Under such circumstances, the long hedge for feeder cattle may do more to increase profits and reduce risk than the

Table 4. Results of simulated hedging strategies for the small grains grazing production alternative in dollars per head, 1972-1977.

Strategy	Average Return	Change in Returns From Strategy 1	Standard Deviation of Returns	Change in Std. Dev. From Strategy 1	Coefficient of Variation	Low Return	High Return
1. No Hedge	13.20	--	50.13	--	379.9%	-69.03	85.04
2. Hedge & Hold	4.67	-8.53	13.92	-36.21	298.5%	-16.15	24.28
3. 3-10	21.64	+8.44	20.76	-29.37	95.9%	-1.80	48.75
4. 4w-5-10	22.04	+8.84	23.70	-26.43	107.5%	-0.19	60.71
5. 4-8w ($.05)	21.67	+8.47	16.63	-33.50	76.7%	2.16	43.54

Table 5. Results of simulated hedging strategies for the small grains graze-out production alternative in dollars per head, 1972-1977.

Strategy	Average Return	Change in Returns from Strategy 1	Standard Deviation of Returns	Change in Std. Dev. From Strategy 1	Coefficient of Variation	Low Return	High Return
1. No Hedge	49.10	----	50.80	----	103.5%	-46.48	103.34
2. Hedge & Hold	34.62	-14.48	10.08	-40.72	29.1%	21.73	49.76
3. 3-10	67.87	+18.77	32.29	-18.51	47.6%	27.84	108.69
4. 4w-5-10	67.02	+17.92	37.45	-13.35	55.9%	22.61	118.84
5. 4-8w ($.05)	70.54	+21.44	35.64	-15.16	50.5%	28.11	117.30

Table 6. Results of simulated hedging strategies for the summer stocker production alternative in dollars per head, 1972-1977.

Strategy	Average Return	Change in Returns from Strategy 1	Standard Deviation of Returns	Change in Std. Dev. From Strategy 1	Coefficient of Variation	Low Return	High Return
1. No Hedge	1.90	----	53.50	----	2792.2%	-72.73	60.72
2. Hedge & Hold	17.78	+15.88	17.47	-35.58	98.3%	- 2.85	35.69
3. 3-10	22.89	+20.99	36.08	-16.97	157.7%	-14.63	76.86
4. 4w-5-10	21.43	+19.53	36.25	-16.80	169.2%	-17.94	84.01
5. 4-8w ($.05)	31.29	+29.39	29.76	-23.29	95.1%	- 8.22	79.69

Table 7. Summary of the simulated long hedging results using a 90-day planning period in dollars per head, 1972-1977.

Stragegy	Feeder Steer Average Cost	Change in Avg. Cost From Stragety 1	Std. Dev. of Avg. Cost	Change in S.D. From Strategy 1	Coefficient of Variation	High Cost	Low Cost
1. No Hedge	260.25	- - -	49.67	- - -	19.1%	422.58	159.92
2. Hedge & Hold	261.12	+ 1.87	47.64	-2.03	18.2%	438.82	162.51
3. 3 - 10	252.23	- 8.02	46.52	-3.15	18.4%	434.93	169.82
4. 4w-5-10	251.37	- 8.88	47.33	-2.34	18.8%	431.00	164.33
5. 4-8w (.05)	250.35	- 9.90	46.80	-2.87	18.7%	434.93	162.64

Table 8. Summary of the simulated long hedging results using a 180-day planning period in dollars per head, 1972-1977.

Strategy	Feeder Steer Average Cost	Change in Avg. Cost From Strategy 1	Std. Dev. of Avg. Cost	Change in S.D. from Strategy 1	Coefficient of Variation	High Cost	Low Cost
1. No Hedge	260.69	- - -	50.74	- - -	19.5%	422.58	159.92
2. Hedge & Hold	258.22	- 2.47	40.58	-10.16	15.7%	374.10	167.14
3. 3 - 10	243.75	-16.94	40.18	-10.56	16.5%	360.14	173.81
4. 4w-5-10	243.89	-16.80	41.63	- 9.11	17.1%	357.69	161.20
5. 4-8w (.05)	239.87	-20.82	40.38	-10.36	16.8%	357.29	167.12

rt hedge. In the analyses of the long hedge, a 90-day and a 180-day planning horizon re selected. The simulation began on January 1, 1972, and ended November 14, 1977. A new planning period was started each week. The size of the open position for each period was one contract, assumed to consist of 65 head of feeder steers weighing approximately 646 pounds.

The March, April, May, August, September, October and November contracts were used for hedging. The month of the ending date of the planning period determined the month in which the hedge was placed. When the ending date fell past the fourteenth of a delivery month, the next contract was used for hedging to avoid the necessity of taking delivery.

The per head profits from the futures market were subtracted from the cost of a 646 pound feeder steer using the appropriate average weekly cash price for choice 600 to 700 pound feeder steers at Oklahoma City. The average cost per head for each strategy and the standard deviation were calculated to compare the effectiveness of the different strategies in reducing the cost and the variability over the six-year period.

The same trading rules and buy/sell signals used in the optimization procedure were used to place and lift the long hedges. Strategy 1 is a no-hedge strategy corresponding to the situation where cattle are procured at the end of the planning period. Strategy 2 is the fully hedged alternative where the long hedge is placed at the beginning of the planning period and lifted at the end of each period.

Strategies 3, 4 and 5 are the 3-10 averages, the 4w-5-10 averages and the 4w-8 averages with a $0.05 penetration rule, respectively, which were used in conjunction with the short hedges.

Tables 7 and 8 present the summary statistics of the five long hedging strategies tested with the 90-day and 180-day planning horizons. The technical strategies generally provided a smaller average cost of feeders at a lower risk than either the no-hedge or hedge-and-hold strategies. An exception is found with the 4w-5-10 strategy with the 180-day planning period where a lower average cost was attained at the expense of a higher risk compared to the hedge-and-hold strategy. No one of the three technical strategies was clearly superior to the remaining two technical strategies for either the 90-day or the 180-day planning period.

Summary and Conclusions

After a lengthy period of sustained economic losses, cattlemen are now witnessing an upswing in cattle prices in response to significant reductions in the cattle inventory. The price upswing provides opportunities for fixing the cost of feeders through the use of long hedges. As the markets become overbought temporarily, there are still opportunities for the short hedge on the significant corrections that will occur.

In any hedging program, profits can be enhanced through better timing of the placement and lifting of hedges. This research investigated the use of moving averages as a means of timing hedges in a manner which would increase profits and reduce price risk.

A number of moving average sets of different lengths were analyzed to determine which combination would produce the greatest profits. The better sets of averages were then used in developing selective hedging strategies for simulated production situations.

Based on the results obtained from the selective hedging strategies there was an effective increase in returns and smaller risk compared with the no-hedge strategy. Hedgers should recognize that selective hedging will not always increase returns from each production period but that in the long run the average net return should be higher and less variable. The hedger must be willing to stick with his hedging strategy. The

hedger who abuses a selective strategy by failing to honor the signal is playing guessing game which has hurt so many in the futures market.

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OKLAHOMA

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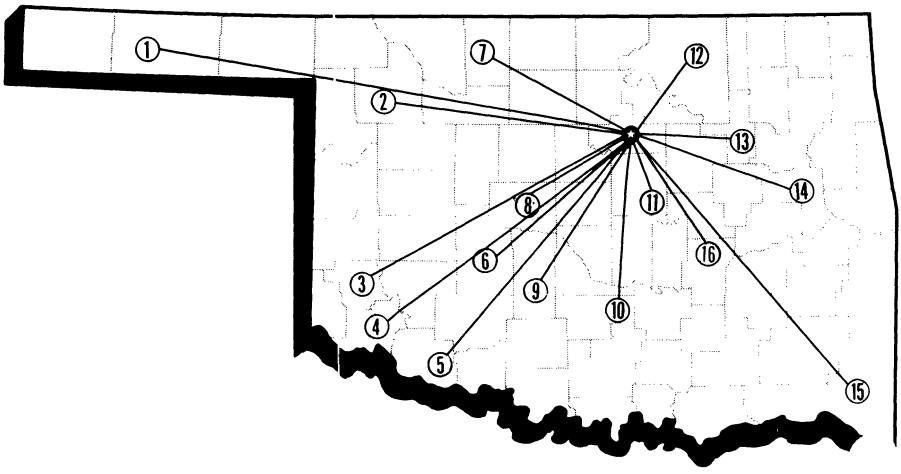
System Covers the State



Main Station — *Stillwater, Perkins and Lake Carl Blackwell*

1. Panhandle Research Station — *Goodwell*
2. Southern Great Plains Field Station — *Woodward*
3. Sandyland Research Station — *Mangum*
4. Irrigation Research Station — *Altus*
5. Southwest Agronomy Research Station — *Tipton*
6. Caddo Research Station — *Ft. Cobb*
7. North Central Research Station — *Lahoma*
8. Southwestern Livestock and Forage Research Station — *El Reno*
9. South Central Research Station — *Chickasha*
10. Agronomy Research Station — *Stratford*
11. Pecan Research Station — *Sparks*
12. Veterinary Research Station — *Pawhuska*
13. Vegetable Research Station — *Bixby*
14. Eastern Research Station — *Haskell*
15. Kiamichi Field Station — *Idabel*
16. Sarkeys Research and Demonstration Project — *Lamar*